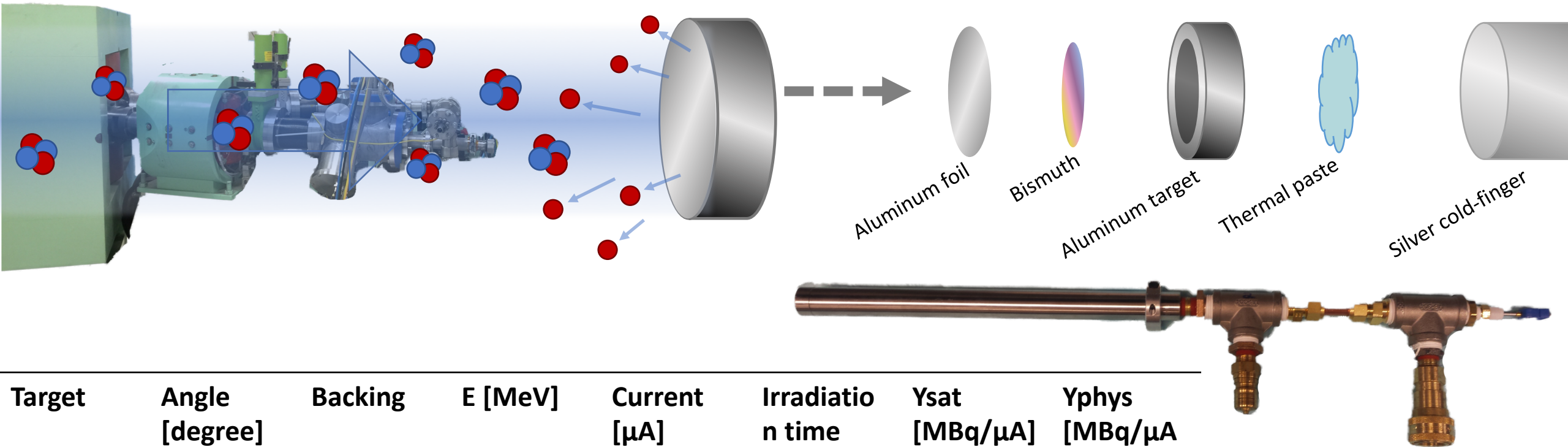


# University of Pennsylvania

Department of Radiology

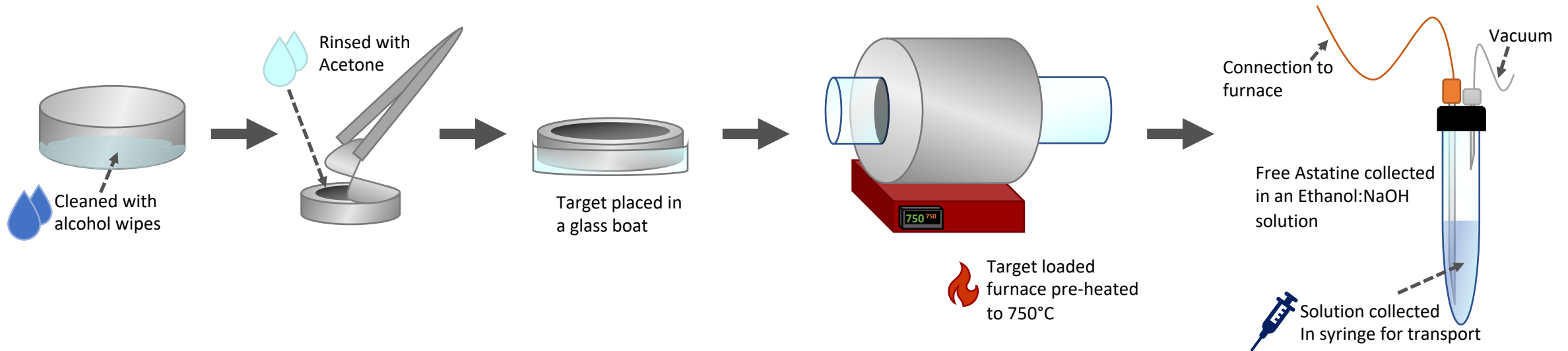
Division of Nuclear Medicine and Molecular Imaging

# Cyclotron production of $^{211}\text{At}$



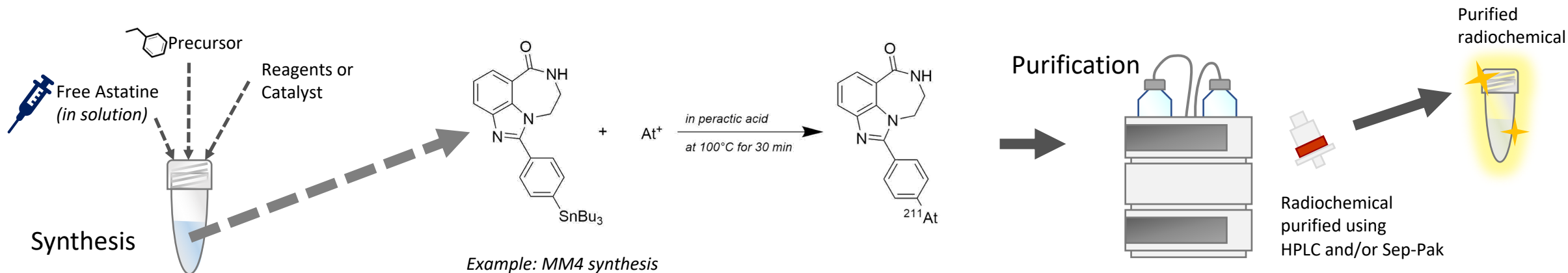
Target	Angle [degree]	Backing	E [MeV]	Current [ $\mu\text{A}$ ]	Irradiation time [min]	Ysat [MBq/ $\mu\text{A}$ ]	Yphys [MBq/ $\mu\text{A}$ h]
Ext	90	Al	$\sim 28$	$7.1 \pm 0.2$	180	33	11

# Dry distillation

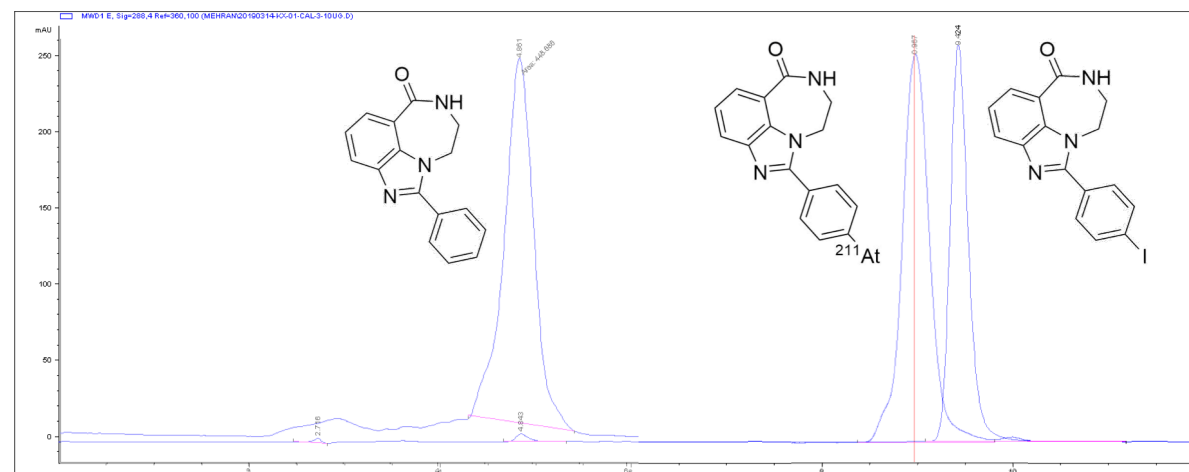


Time (min)	Initial (mCi)	Final (mCi)	% yield
24	3.4	1.7	50
25	1.6	0.75	46
20	2.8	2.2	78

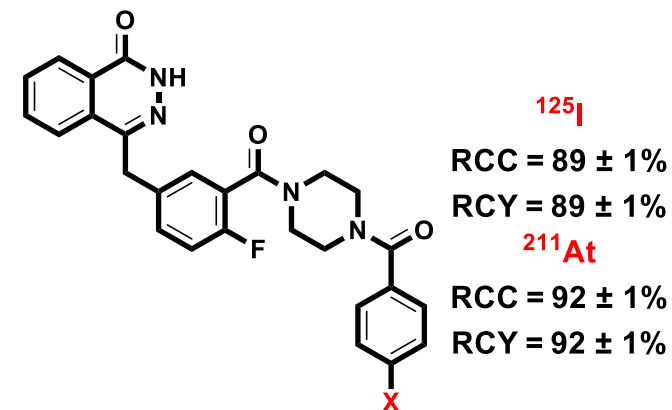
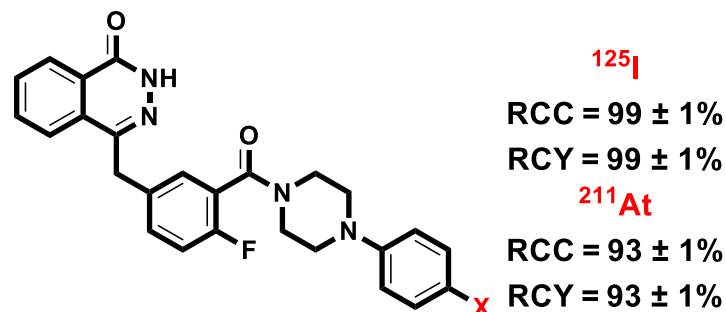
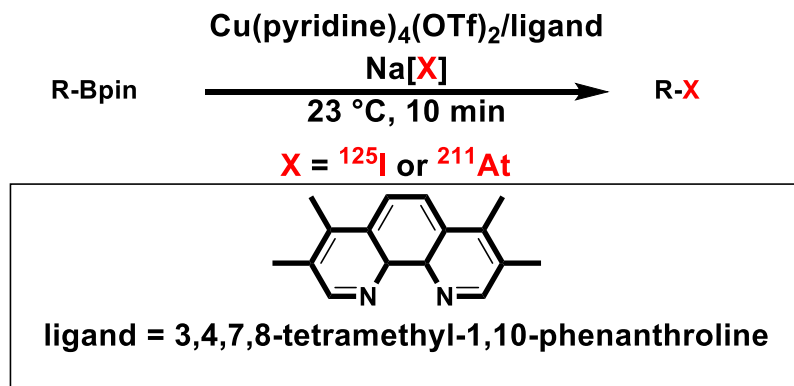
# Astatine Radiochemistry – Synthesis and Purification



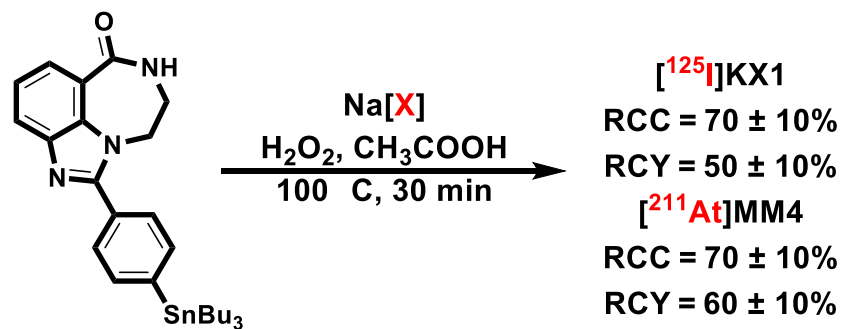
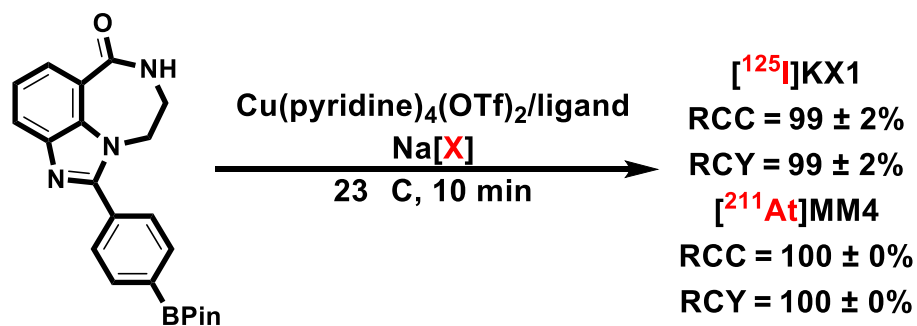
- High specific activity
- Short synthesis
- Good radiochemical yield
- Easy purification



# Radiochemistry



## Cu-Mediated Route VS Traditional Route

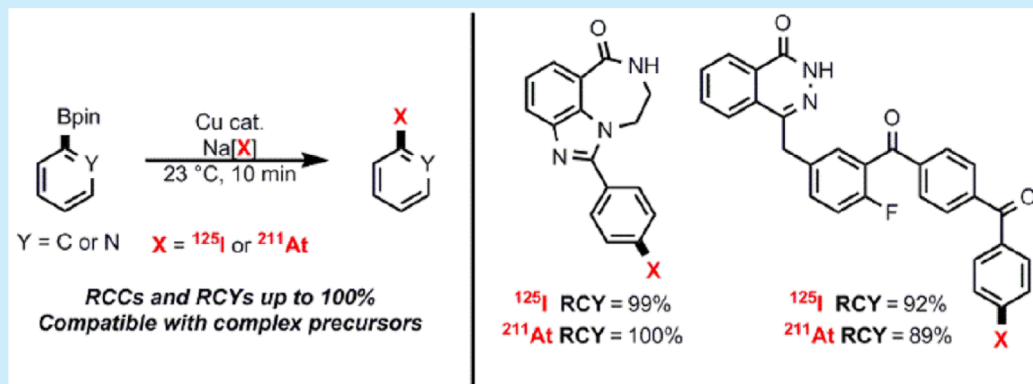


# Rapid Cu-Catalyzed [ $^{211}\text{At}$ ]Astatination and [ $^{125}\text{I}$ ]Iodination of Boronic Esters at Room Temperature

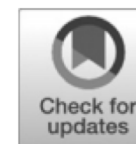
Sean W. Reilly,<sup>ID</sup> Mehran Makvandi,\* Kuiying Xu, and Robert H. Mach\*<sup>ID</sup>

Department of Radiology, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania 19104, United States

**S** Supporting Information



# Targeting PARP-1 with Alpha-Particles Is Potently Cytotoxic to Human Neuroblastoma in Preclinical Models



Mehran Makvandi<sup>1</sup>, Hwan Lee<sup>1</sup>, Laura N. Puentes<sup>1</sup>, Sean W. Reilly<sup>1</sup>, Komal S. Rathi<sup>2,3,4</sup>, Chi-Chang Weng<sup>1</sup>, Ho Sze Chan<sup>1</sup>, Catherine Hou<sup>1</sup>, Pichai Raman<sup>2,3,4</sup>, Daniel Martinez<sup>5</sup>, Kuiying Xu<sup>1</sup>, Sean D. Carlin<sup>1</sup>, Roger A. Greenberg<sup>6</sup>, Bruce R. Pawel<sup>5</sup>, Robert H. Mach<sup>1</sup>, John M. Maris<sup>2,3</sup>, and Daniel A. Pryma<sup>1</sup>